



FORUM

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HAZARD MITIGATION: PLANNING TO AVOID FUTURE LOSSES

On Friday, November 9, 1979, the Area Planning Board (APB) of Palm Beach County sponsored a "Hurricane and Natural Disaster Preparation and Response" seminar at the Helen Wilkes Hotel in West Palm Beach. The seminar was scheduled to allow local officials an opportunity to review public and private responses to Hurricane David; discuss the anticipated affects on the County of a truly severe hurricane; and consider proposed federal and state programs that attempt to reduce future loss of life and property damages from natural disasters through hazard mitigation. More than 100 individuals attended the seminar, indicating a heightened and continued interest in this subject. Among those in attendance were elected local officials, municipal and County civil defense personnel, professional planners, police and fire department officers, representatives of public utilities, and other individuals with an interest in natural disaster preparation.

A number of well-known and knowledgeable speakers addressed those in attendance. Those making presentations during the day were: Col. John Cadenhead, Civil Defense Coordinator, Palm Beach County; Buck Christian, Meteorologist-in-Charge, National Weather Service, PBIA; W. R. Durham, Manager of Engineering, Southern Bell Telephone Company, West Palm Beach; Dr. Neil Frank, Director, National Hurricane Center, Miami; Edward J. Nolan, Mayor, Indian River Shores, St. Lucie County; D. F. O'Connell, Manager, West Palm Beach District, Florida Power and Light Company; Richard Simmons, City Manager, City of West Palm Beach; Joseph Schweigart, Deputy Director of Field Services, South Florida Water Management District; Robert Wilkerson, Assistant Bureau Chief, Bureau of Disaster Preparedness, Florida Department of Community Affairs, Tallahassee; and John Willis, Disaster Director, Palm Beach County Red Cross.

All speakers at the seminar contributed to its success. Unfortunately, it is impossible to summarize all presentations in this newsletter. Given the importance of planning for the affects of future hurricanes and natural disasters, the remarks and comments of Dr. Neil Frank and Mr. Robert Wilkerson are summarized herein. Their remarks principally were concerned with the potential damages Palm Beach County could suffer from future natural disasters and steps now being contemplated as a means of reducing those damages.

"SOUTH FLORIDA: The Potential For Disaster"

Dr. Neil Frank, Director of the National Hurricane Center in Miami, reviewed damages inflicted by Hurricane Frederic on the Mobile Bay area of the Alabama coast. Although the Alabama and East Florida coastlines are physically dissimilar, he made use of "before and after" photographs of Mobile Bay and



A portion of the audience, more than 100 local officials and interested individuals attended the seminar.

the City of Mobile to graphically display the magnitude of damages that might have occurred in the County had Hurricane David reached an intensity comparable to Frederic.

Dr. Frank listed major physical damage suffered on the Alabama coastline as a result of Frederic:

- 1) Dauphin Island, a barrier island located off the southwest portion of Mobile Bay, was completely submerged in places as a result of a hurricane storm surge of approximately twenty-two (22) feet;
- 2) Gulf Shores, a small community on the eastern peninsula of Mobile Bay, suffered the loss of seventy-one (71) of eighty-eight (88) residences fronting the Gulf of Mexico; and
- 3) Mobile, Alabama, had approximately 15,000 trees uprooted by hurricane winds and damage to homes and other structures was quite extensive.

In Gulf Shores, Dr. Frank noted that many of the destroyed residences were constructed on pilings, the commonly approved method for protecting structures liable to suffer significant wave action. In direct contrast with the near-total destruction of residences directly facing the Gulf, only nineteen (19) of sixty-four (64) houses on the bay side of the peninsula in Gulf Shores were destroyed by the hurricane. The bayside homes are located approximately 200-300 yards inland and demonstrate the protection offered by building at a considerable distance from the shoreline. He showed that a significant portion of the damage to the bayside homes was attributed to debris from the homes facing the Gulf.



Dr. Neil Frank, Director of the National Hurricane Center, discussed the vulnerability of South Florida to a major hurricane.

Dr. Frank also discussed building practices in South Florida, a topic he believes is of serious concern. He noted that most local governments in this part of the state have adopted the Southern Standard Building Code, perhaps the strictest code in the nation.

However, the code does not completely address the hurricane threat faced by this region. As presently written, the code requires structures to be built in a manner able to withstand winds up to 125 miles per hour. There is no corresponding requirement for structures to withstand water hazards normally associated with a hurricane. He concludes that most coastal structures in South Florida could not withstand the destructive forces accompanying a hurricane the magnitude of Hurricane Camille, the 1969 hurricane that ravaged the Mississippi Gulf coast.

In his concluding remarks, Dr. Frank stated South Florida (and many other parts of the nation) are now more vulnerable to hurricanes than at any time in history. Despite significant technological advances in this country, such factors as coastal developments in low-lying areas and population growth indicate a hurricane of sufficient magnitude could cause more death and destruction than the 1900 hurricane which struck Galveston, Texas. In that storm, approximately 6,000 people perished.

"HAZARD MITIGATION: REDUCING POTENTIAL DAMAGE THROUGH REGULATION"

Mr. Robert Wilkerson, Deputy Bureau Chief, Bureau of Disaster Preparedness, Florida Department of Community Affairs, discussed a number of topics relevant to hurricanes and natural disasters. However, he placed particular emphasis on hazard mitigation, an emerging issue prompted by steadily escalating costs associated with damage recovery and disaster assistance programs.

In order to dispel any complacency among members of the audience, Mr. Wilkerson stated if a hurricane the intensity of Hurricane Frederic had struck this county, the Town of Palm Beach might well have been under eight feet of water. He called Hurricane David a bad windstorm, a "false experience" that should not lull residents into a false sense of security. Mr. Wilkerson further stated the County's response to the hurricane was more a matter of good fortune rather than pre-planning. As an example, he estimated Palm Beach County would require 20-24 hours to adequately evacuate low-lying or exposed areas for a storm of the magnitude of Frederic. He explained a storm of that size could generate a water surge up to 30 feet, resulting in the creation of one or more new inlets in the County.

Mr. Wilkerson expressed the opinion that the County and state must take appropriate steps to eliminate or reduce vulnerability to natural disasters. This may well mean high hazard areas are to be identified

where construction will not be allowed. This step should be taken as a means to reduce future property damage claims and loss of life. To emphasize the need for a program to eliminate or reduce vulnerability of structures to natural disasters, Mr. Wilkerson revealed that the national flood insurance program represents the second largest expenditure of federal funds, exceeded only by the Social Security Program. He stressed that this expenditure does not include damage payments made by public and private agencies for losses not covered by flood insurance. Mr. Wilkerson commented that many public and private expenditures are for such basic services as roads, water and sewerage facilities, and power lines which have encouraged growth in vulnerable areas.



Mr. Robert Wilkerson of the Florida Department of Community Affairs discussed the importance of hazard mitigation for those areas susceptible to natural disasters. Seated next to Mr. Wilkerson is Mr. Chuck Potter, Chairman of APB, who served as seminar moderator.

Due to the increasing amounts of money appropriated for disaster assistance, the federal government is taking some initial steps to limit the fiscal impact of natural disasters. The most significant federal program to limit recovery costs associated with natural disasters is hazard mitigation.

The essential concept of hazard mitigation is to avoid future damages and restoration costs through a combination of planning, regulatory measures, and improved construction practices. Hazard mitigation can be described as a management program designed to correct past mistakes and avoid future errors. Mr. Wilkerson cited examples of repeated expenditures of federal funds to restore damaged or destroyed property located in acknowledged high hazard areas:

- 1) A seawall in Panama City has been rebuilt three times in the past ten years;
- 2) Homes in the Mississippi Valley have been rebuilt four times;

- 3) Frankfort, Kentucky has been severely flooded twice in the last ten years, despite the expenditure of more than \$1 billion in flood control works; and
- 4) Homes in Tampa now are in the process of being paid for twice in the last half year.

As a result of these and numerous other situations, the federal government is now taking action. Mr. Wilkerson noted a new clause has been added in recent federal-state agreements signed to provide federal disaster assistance to areas in Florida suffering from the affects of natural disasters. The clause requires the state to ensure recovery operations are carried out with a consideration of hazard mitigation procedures. The clause also directs the state to complete a hazard mitigation study of areas affected by natural disasters and to ensure the implementation of recommendations arising from the study.

The proposed federal mitigation program also includes a provision requiring the state hazard mitigation coordinator to review all applications for federal disaster assistance grants. The coordinator will have to approve all the grants prior to any expenditure of funds. In this manner, the state will be placed in a position to determine if recovery efforts are being implemented in accordance with hazard mitigation policies.

Regarding the implementation of hazard mitigation plans following a natural disaster, Mr. Wilkerson believes such plans may cause extensive changes to local government programs. He specifically cited land use policies and capital improvements programs as examples of local measures that may require massive changes to meet realities imposed by hazard mitigation planning. To demonstrate changes to local policies that may occur, Mr. Wilkerson described recent efforts to enforce hazard mitigation practices on a local level. In Citrus County, the reconstruction of certain homes in an identified flood hazard area was prohibited unless the homes and their septic tank systems were constructed to provide protection against a ten-year flood event. Although a small step, this may be an indication of more significant regulatory measures to be developed and enforced in the future.

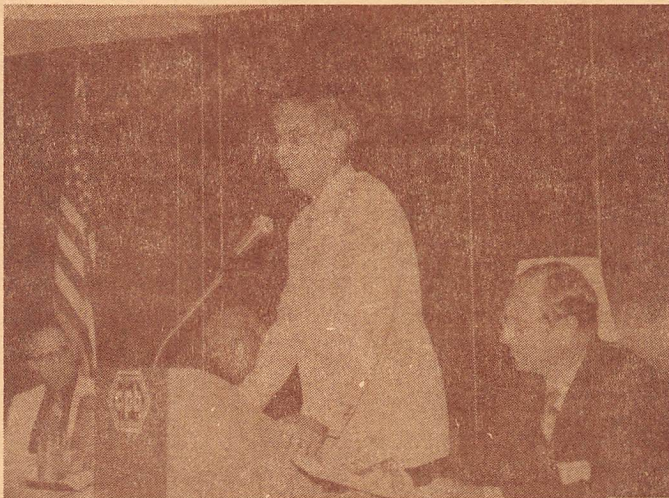
In closing comments, Mr. Wilkerson expressed his belief the federal government may cease to provide financial support for restoration activities in high hazard areas. Additionally, state and local governments may be required to adopt hazard mitigation plans as a condition for receiving federal disaster assistance.

SEMINAR INSIGHTS

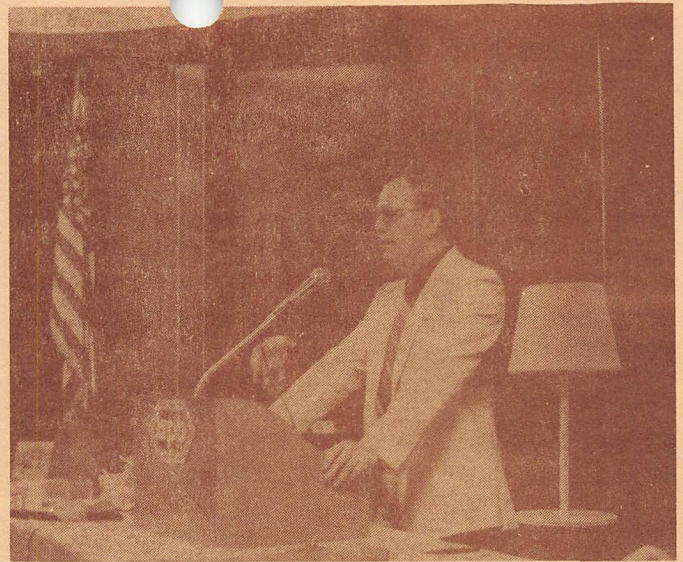
The remarks by Dr. Frank, Mr. Wilkerson, and presentations by the other speakers at the seminar, help

bring into focus a number of significant observations. Where appropriate, remedial action should begin or be continued. Principal observations that may be drawn from the seminar include:

1. In recent years, Palm Beach County has been extremely fortunate to avoid the affects of one or more severe hurricanes;
2. There is a probability that the County will be struck by a severe hurricane in the near future;
3. If a major hurricane was to strike the County, an enormous amount of damage could result and loss of life may be severe;
4. Various aspects of local preparations for hurricanes need improvement to adequately protect lives and property;
5. A concentrated program of public education is necessary to adequately inform people as to necessary hurricane preparatory measures and the reasons for taking such measures;
6. Due to increased coastal development and population growth, the County's vulnerability to a storm has been steadily increasing;
7. Due to the rather large proportion of elderly citizens residing in the County, evacuation due to the threat of a severe hurricane is made more difficult and time consuming;
8. A larger number of committed volunteers to assist in disaster relief activities is needed;
9. Volunteer medical assistance during such events as Hurricane David needs improvement, and questions of professional liability should be clarified by the Florida Legislature;



The West Palm Beach City Manager, Richard Simmons, noted that adequate preparation for hurricanes is a means for local governments to save money in the long run.



The response of Florida Power and Light to problems caused by Hurricane David was reviewed by D. F. O'Connell, the West Palm Beach District Manager for Florida Power and Light.

10. Municipalities and the County should consider adopting ordinances which require contractors to secure all loose equipment and materials if a hurricane threatens;
11. The County should acquire the services of knowledgeable consultants to "model" predicted wind and water affects on the County of hurricanes of varying characteristics;
12. The present trend in federal disaster management activities is to require or encourage the use of hazard mitigation / avoidance / reduction techniques to reduce disaster claims, especially repetitive claims.
13. Hazard mitigation techniques, including alterations to planning, zoning, building codes, and capital improvements programs may result in major changes to current land use practices;
14. Local building codes may need extensive modification to provide greater resistance to wind and water forces associated with hurricanes;
15. There is a need to make more detailed plans and preparations to meet circumstances encountered following a hurricane; and
16. There may be a need to make substantial improvements to existing drainage and canal systems for purposes of adequate flood control.

The preceding list of observations is somewhat formidable, which indicates the real need to improve local preparations for hurricanes and take those steps that may reduce future loss of life and property damage to the residents of Palm Beach County.

DISASTER ASSISTANCE

During the course of the seminar, the subject of disaster assistance was mentioned a number of times by the speakers and members of the audience. Table 1 provides a very brief summary of major disaster as-

sistance programs available through the federal government. Eligibility requirements for each program vary, and are dependent on the severity of the natural disaster and the sufficiency of local resources.

TABLE 1
SUMMARY OF MAJOR FEDERAL DISASTER ASSISTANCE PROGRAMS

Program	Department	Objective	Contact*
1. Emergency Conservation Program	Department of Agriculture	Farmland rehabilitation	Agricultural Stabilization and Conservation Service
2. Emergency Feed Program	Department of Agriculture	Livestock maintenance	Agricultural Stabilization and Conservation Service
3. Emergency Loans	Farmers Home Administration	Recuperation from natural disasters	Farmers Home Administration
4. Commercial Fisheries Disaster Assistance	Department of Commerce	Fisheries resource restoration	National Marine Fisheries Service
5. Flood and Coastal Works Rehabilitation	Department of the Army	Flood and coastal works restoration or repair	Corps of Engineers
6. Emergency Flood, Rescue & Coastal Works Protection	Department of the Army	Immediate local assistance during floods or coastal storms	Corps of Engineers
7. Flood Insurance	Department of Housing & Urban Development	Subsidized insurance against damage by rising waters	Office of Flood Insurance & Hazard Mitigation
8. Mortgage Insurance	Department of Housing & Urban Development	Housing assistance for replacement dwellings	Department of Housing and Urban Development
9. Disaster Assistance	Department of Housing & Urban Development	Restoration assistance through grants to local governments	Federal Emergency Management Administration
10. Physical Disaster Loans	Small Business Administration	Physical property restoration	Small Business Administration
11. Economic Injury Disaster Loans	Small Business Administration	Financial assistance for small business concerns	Small Business Administration
12. Assistance to Major, Non-agricultural Business Employers	Small Business Administration	Resumption of operations following major damage	Small Business Administration

Source: 1979 Catalogue of Federal Domestic Assistance, U.S. Office of Management and Budget.

*(Note: Please contact the Area Planning Board if you desire further information regarding individual programs and the proper federal office to contact).

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